

2011-01-04 Substitute\_Sequence\_Listing  
SEQUENCE LISTING

<110> Feldmann, Kenneth  
Pennell, Roger  
Kwok, Shing  
Dang, Van-Dinh  
Zhang, Hongyu

<120> NUCLEOTIDE SEQUENCES AND POLYPEPTIDES ENCODED THEREBY USEFUL FOR  
INCREASING PLANT SIZE AND INCREASING THE NUMBER AND SIZE OF LEAVES

<130> 2750-1573PUS1

<140> 10/572,827  
<141> 2006-03-21

<150> PCT/US03/25997  
<151> 2003-08-18

<160> 50

<170> PatentIn version 3.0

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<213> Zea mays subsp. mays

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<223>	ceres Seq. ID no. 12355478

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 50 55 60

Asn Gly Thr Ala Phe Lys Ala Leu Arg Arg Glu Tyr Val Glu Tyr Glu  
 65 70 75 80

Lys Thr Asp Ala Pro Val Arg Arg Gly Ala Lys Cys Cys Gly Val Pro  
 85 90 95

Ala Asn Pro Trp Met Gln His Phe Arg Pro Arg Ser Asp Gly Gly Asn  
 100 105 110

Asn Ala Arg Gly Asp Gly Leu Gly Asp Ser Val Gly Asp Leu Glu Ser  
 115 120 125

Gly Thr Glu Ala Asn Arg Lys Ser Leu Ser Ala Ser His Gly Arg Glu  
 130 135 140

Arg Asp Ala Cys Glu Gly Glu Pro Gln Leu Leu His Glu Ser Arg Glu  
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## 2011-01-04 Substitute\_Sequence\_Listing

<211> 163  
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 <223> ceres Seq. ID no. 12355479

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 35 40 45  
 Glu Tyr Glu Lys Thr Asp Ala Pro Val Arg Arg Gly Ala Lys Cys Cys  
 50 55 60  
 Gly Val Pro Ala Asn Pro Trp Met Gln His Phe Arg Pro Arg Ser Asp  
 65 70 75 80  
 Gly Gly Asn Asn Ala Arg Gly Asp Gly Leu Gly Asp Ser Val Gly Asp  
 85 90 95  
 Leu Glu Ser Gly Thr Glu Ala Asn Arg Lys Ser Leu Ser Ala Ser His  
 100 105 110  
 Gly Arg Glu Arg Asp Ala Cys Glu Gly Glu Pro Gln Leu Leu His Glu  
 115 120 125  
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<210> 6  
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<213> Zea mays subsp. mays

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Glu Tyr Glu Lys Thr Asp Ala Pro Val Arg Arg Gly Ala Lys Cys Cys 45  
35 40 45  
Gly Val Pro Ala Asn Pro Trp Met Gln His Phe Arg Pro Arg Ser Asp 60  
50 55 60  
Gly Gly Asn Asn Ala Arg Gly Asp Gly Leu Gly Asp Ser Val Gly Asp 80  
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Leu Glu Ser Gly Thr Glu Ala Asn Arg Lys Ser Leu Ser Ala Ser His 95  
85 90 95  
Gly Arg Glu Arg Asp Ala Cys Glu Gly Glu Pro Gln Leu Leu His Glu 110  
100 105 110  
Ser Arg Glu Val Ser Asp Gln Asn Phe Ala Asp Asp Glu Ala Glu Ala 125  
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<220>  
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<213> Zea mays subsp. mays

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<223> ceres Seq. ID no. 12410517

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35 40 45	
Phe Val Asp Gln Leu Tyr Asn His Gly Asn His Pro His Asp Ala Asn	
50 55 60	
Gly Ala Gly Phe Lys Val Leu Arg Arg Gly Val Trp Glu Tyr Ile Glu	
65 70 75 80	
Tyr Glu Lys Thr Ser Ala Pro Val Arg Ser Gly Ala Lys Cys Cys Val	
85 90 95	
Pro Ala Asn Pro Trp Ile Arg His Phe Arg Pro Arg Asp Cys Gly Ser	
100 105 110	
Asn Ala Gln Ser Asp Ala Val Glu Ala Ser Val Gly Asp His Glu Ser	
115 120 125	
Gly Thr Gln Ala Ser Arg Lys Ser Pro Ser Val Ser His Gly Arg Glu	
130 135 140	
Arg Gly Ala Cys Lys Gly Glu Pro Gln Ile Leu His Glu Ser Thr Glu	
145 150 155 160	
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165 170 175	
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<213> Zea mays subsp. mays

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His Asp Ala Asn Gly Ala Gly Phe Lys Val Leu Arg Arg Gly Val Trp  
35 40 45  
Glu Tyr Ile Glu Tyr Glu Lys Thr Ser Ala Pro Val Arg Ser Gly Ala  
50 55 60  
Lys Cys Cys Val Pro Ala Asn Pro Trp Ile Arg His Phe Arg Pro Arg  
65 70 75 80  
Asp Cys Gly Ser Asn Ala Gln Ser Asp Ala Val Glu Ala Ser Val Gly  
85 90 95  
Asp His Glu Ser Gly Thr Gln Ala Ser Arg Lys Ser Pro Ser Val Ser

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His Gly Arg Glu Arg Gly Ala Cys Lys Gly Glu Pro Gln Ile Leu His  
115 120 125

Glu Ser Thr Glu Val Ser Asp Gln Asn Phe Ala Asp Asp Glu Ala Glu  
130 135 140

Ala Glu Thr Glu Ser Met Lys Ala Cys Lys Lys Arg Arg Leu Ser Arg  
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Ala Leu His Ser Gly Ala Glu  
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<212> DNA  
<213> Zea mays subsp. mays

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<213> Zea mays subsp. mays

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Leu Arg Arg Gly Val Trp Glu Tyr Ile Glu Tyr Glu Lys Thr Ser Ala  
35 40 45  
Pro Val Arg Ser Gly Ala Lys Cys Cys Val Pro Ala Asn Pro Trp Ile  
50 55 60  
Arg His Phe Arg Pro Arg Asp Cys Gly Ser Asn Ala Gln Ser Asp Ala

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70 75 80

Val Glu Ala Ser Val Gly Asp His Glu Ser Gly Thr Gln Ala Ser Arg  
85 90 95  
Lys Ser Pro Ser Val Ser His Gly Arg Glu Arg Gly Ala Cys Lys Gly  
100 105 110  
Glu Pro Gln Ile Leu His Glu Ser Thr Glu Val Ser Asp Gln Asn Phe  
115 120 125  
Ala Asp Asp Glu Ala Glu Ala Thr Glu Ser Met Lys Ala Cys Lys  
130 135 140  
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145 150 155

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<212> DNA  
<213> Brassica napus

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<223> ceres Seq. ID no. 4788142

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gaatgaat acgcctacag aatggaccga tgagaagcat agtttgatc ttaaatcaat 240  
ggaagcttcc ttctgtgatc agctgtacaa cttccctcggt gcgcctggct cccaaaacaa 300  
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gatgagaagc atatgttgc tctttaatca atggaagctt ccttcgttga tcagctgtac 180  
aactccctcg gtgcgtcg cttccaaaac aacaaggata ctgtcgacc atcgagaagg 240  
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<210> 17  
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<212> PRT  
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<220>  
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<222> (1)..(92)  
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35 40 45  
Lys Ser Met Glu Ala Ser Phe Val Asp Gln Leu Tyr Asn Ser Leu Gly  
50 55 60  
Ala Leu Gly Ser Lys Asn Asn Lys Asp Thr Val Gly Pro Ser Arg Arg  
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Phe Gly Asp Gly Gly Lys Pro Ser Glu Glu Gln Val  
85 90

<210> 18  
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<212> DNA  
<213> Brassica napus

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30

Leu Tyr Asn Ser Leu Gly Ala Leu Gly Ser Lys Asn Asn Lys Asp Thr  
35 40 45  
Val Gly Pro Ser Arg Arg Phe Gly Asp Gly Gly Lys Pro Ser Glu Glu  
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Gln Val  
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<210> 20  
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<212> DNA  
<213> Brassica napus

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aggatactgt cgaccatcg agaaggttcg gtatggtgg aaaaaccttct gaagaacagg 180  
tatgaa 186

<210> 21  
<211> 62  
<212> PRT  
<213> Brassica napus

<220>  
<221> peptide  
<222> (1)..(62)  
<223> ceres Seq. ID no. 4788145

<400> 21  
Met Lys Ile Arg Leu Gln Asn Gly Pro Met Arg Ser Ile Val Cys Ile  
1 5 10 15  
Leu Asn Gln Trp Lys Leu Pro Ser Leu Ile Ser Cys Thr Thr Pro Ser  
20 25 30  
Val Arg Ser Ala Pro Lys Thr Thr Arg Ile Leu Ser Asp His Arg Glu  
35 40 45  
Gly Ser Val Met Val Glu Asn Leu Leu Lys Asn Arg Tyr Glu  
50 55 60

<210> 22  
<211> 486  
<212> DNA  
<213> Brassica napus

<220>  
<221> misc\_feature  
<222> (1)..(486)  
<223> ceres Seq. ID no. 4796909

2011-01-04 Substitute\_Sequence\_Listing

<400> 22  
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agcccaagct ccgacgattc ttcttctgtt ggggaagaga cgacttcttc aatgtattct 180  
gcgaggaatg aagatacgc tacagaatgg accgatgaga agcatagttt gtatcttaaa 240  
tcaatggaaag cttccctcg ttagtgcgtg tacaactccc tcgggcgcctt cggctccaaa 300  
aacaacaagg atactgtcg accatcgaga aggttcgggtg atgggtggaaa accttctgaa 360  
gaacagaaga tgaatgtgag gcagcctgag tatcgtctca atggaagaca cggcgtcgc 420  
tctcacgagt ttcttaggat tccatggatc aagcactata agccttcacc aaagtccctt 480  
acagat 486

<210> 23  
<211> 393  
<212> DNA  
<213> Brassica napus

<400> 23  
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gaagagacga ctcttcaat gtattctcg aggaatgaag atacgcctac agaatggacc 120  
gatgagaagc atagtttta tcttaaatca atggaagctt ccttcgttga tcagctgtac 180  
aactccctcg gtgcgctcg ctccaaaac aacaaggata ctgtcgacc atcgagaagg 240  
ttcggtgatg gtggaaaacc ttctgaagaa cagaagatga atgtgaggca gcctgagttat 300  
cgtctcaatg gaagacacgg tcgtcgctct cacgagtttcc tttaggatcc atggatcaag 360  
cactataaagc ctccacccaaa gtccttaaca gat 393

<210> 24  
<211> 131  
<212> PRT  
<213> Brassica napus

<220>  
<221> peptide  
<222> (1)..(131)  
<223> ceres Seq. ID no. 4796910

<400> 24  
Met Val Gly Asp Tyr Arg Glu Asn Tyr Ser Pro Ser Ser Asp Asp Ser  
1 5 10 15  
Ser Ser Val Gly Glu Glu Thr Thr Ser Ser Met Tyr Ser Ala Arg Asn  
20 25 30  
Glu Asp Thr Pro Thr Glu Trp Thr Asp Glu Lys His Ser Leu Tyr Leu

2011-01-04 Substitute\_Sequence\_Listing  
40  
45

35  
Lys Ser Met Glu Ala Ser Phe Val Asp Gln Leu Tyr Asn Ser Leu Glu  
50 55 60  
Ala Leu Gly Ser Lys Asn Asn Lys Asp Thr Val Gly Pro Ser Arg Arg  
65 70 75 80  
Phe Gly Asp Gly Gly Lys Pro Ser Glu Glu Gln Lys Met Asn Val Arg  
85 90 95  
Gln Pro Glu Tyr Arg Leu Asn Gly Arg His Gly Arg Arg Ser His Glu  
100 105 110  
Phe Leu Arg Ser Pro Trp Ile Lys His Tyr Lys Pro Ser Pro Lys Ser  
115 120 125  
Leu Thr Asp  
130

<210> 25  
<211> 315  
<212> DNA  
<213> Brassica napus  
  
<400> 25  
atgttattctg cgagaaatga agatacgcct acagaatgga ccgatgagaa gcatagttt 60  
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ggctccaaaa acaaacaagga tactgtcgg a ccatcgagaa ggttcggtga tggtggaaaa 120  
ccctctgaaag aacagaagat gaatgtgagg cagcctgagt atcgtctcaa tggagacac 180  
ggtcgtcgc tctcacgagtt tcttaggagt ccatggatca agcactataa gccttcacca 240  
aagtccctaa cagat 300  
315  
<210> 26  
<211> 105  
<212> PRT  
<213> Brassica napus  
  
<220>  
<221> peptide  
<222> (1)..(105)  
<223> ceres Seq. ID no. 4796911

<400> 26  
Met Tyr Ser Ala Arg Asn Glu Asp Thr Pro Thr Glu Trp Thr Asp Glu  
1 5 10 15  
Lys His Ser Leu Tyr Leu Lys Ser Met Glu Ala Ser Phe Val Asp Gln  
20 25 30  
Leu Tyr Asn Ser Leu Gly Ala Leu Gly Ser Lys Asn Asn Lys Asp Thr  
35 40 45  
Val Gly Pro Ser Arg Arg Phe Gly Asp Gly Gly Lys Pro Ser Glu Glu  
50 55 60

2011-01-04 Substitute\_Sequence\_Listing

Gln Lys Met Asn Val Arg Gln Pro Glu Tyr Arg Leu Asn Gly Arg His  
65 70 75 80  
Gly Arg Arg Ser His Glu Phe Leu Arg Ser Pro Trp Ile Lys His Tyr  
85 90 95  
Lys Pro Ser Pro Lys Ser Leu Thr Asp  
100 105

<210> 27  
<211> 243  
<212> DNA  
<213> Brassica napus

<400> 27  
atggaagctt ccttcgttga tcaagctgtac aactccctcg gtgcgctcgg ctccaaaaac 60  
aacaaggata ctgtcgacc atcgagaagg ttccgtatgtat gtggaaaacc ttctgaagaa 120  
cagaagatga atgtgaggca gcctgagttat cgtctcaatg gaagacacgg tcgtcgctct 180  
cacgagtttc ttaggatgtcc atggatcaag cactataaagc cttcacccaaa gtcctaaaca 240  
gat 243

<210> 28  
<211> 81  
<212> PRT  
<213> Brassica napus

<220>  
<221> peptide  
<222> (1)..(81)  
<223> ceres Seq. ID no. 4796912

<400> 28  
Met Glu Ala Ser Phe Val Asp Gln Leu Tyr Asn Ser Leu Gly Ala Leu  
1 5 10 15  
Gly Ser Lys Asn Asn Lys Asp Thr Val Gly Pro Ser Arg Arg Phe Gly  
20 25 30  
Asp Gly Gly Lys Pro Ser Glu Glu Gln Lys Met Asn Val Arg Gln Pro  
35 40 45  
Glu Tyr Arg Leu Asn Gly Arg His Gly Arg Arg Ser His Glu Phe Leu  
50 55 60  
Arg Ser Pro Trp Ile Lys His Tyr Lys Pro Ser Pro Lys Ser Leu Thr  
65 70 75 80  
Asp

<210> 29

## 2011-01-04 Substitute\_Sequence\_Listing

<211> 1014  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> misc\_feature  
 <222> (1)..(1014)  
 <223> ceres Seq. ID no. 12321174

<400> 29  
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 agagagacga cggagttctt ttcttaagca ccggagagga ggagaagcaa cgatggagaa 120  
 tgattgcacg gtgaatattg tctctctgga gaaggatcgc gatgttcgg aggctcgcc 180  
 tgaatctcag agcgagtcga ctcttcgaa ctgcgtcgat tccgggttta cggctgagac 240  
 ctctcgttctt gatgtcgattt ccaaactggta tgaatgtact gcttggacga atgagaaaca 300  
 caactcatat ctgttatttt tagagagctc gtgtgttagg caattatact ccttgcttgg 360  
 aggtgggact cagagacttt ctagaactcg tgatgtgcag tctactctc ataaatcagc 420  
 tgatcgtttt accgtcctac aaaatggttt ctggcagaag gtaactttt gaaagaaaca 480  
 atcttggttt gagacttcat ctgagtttcg tttcacaga aattcattga gaaataagcc 540  
 tggaaattcc aacggaaattt acaccatggg aactactgtc caaggagatg tggtatgtca 600  
 tgaacaaacc aaacactcag aggcgtcagg gcagaatttc agagaagaag aagaagaaga 660  
 agagaaggga gaggtgagca aaaaacgaga aagagaagca aataacgtat atatgttattt 720  
 gaaggaggat caggttgtgc cggtaaaggat ggtgaagccc agaacgtgaa agcatttagga 780  
 agtgttagatg aaatactatg aatagagata aagaatataga agaagggtgt gtacgtatg 840  
 tggagagggt ttgtttgtt gtatagcgtg aggtctaaaga gagccttct tataaggaa 900  
 tccaatggga tatggaaata ggattgggtt ttgtttctgt taaattttgt ctaatgttaa 960  
 cttagggaaa agttatctga tagttagtc atcttatggc aatttttatttc tttt 1014

<210> 30  
 <211> 654  
 <212> DNA  
 <213> Arabidopsis thaliana

<400> 30  
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 gcgtcggtg aatctcagag cgagtcgact ctttgcact cgctcgattc cggtgttacg 120  
 gctgagaccc tctcgttctga tgctgattcc aaactggatg aatgtactgc ttggacgaat 180  
 gagaacacaca actcatatct tgattatata gagagctcgat ttgttaggca attataactcc 240  
 ttgtttggag gtgggactca gagactttctt agaactcgtg atgtgcgtc taactctcat 300  
 aatcagctg atcagtttac cgtcctacaa aatgggttgc ggcagaaggt taactttggaa 360

2011-01-04 Substitute\_Sequence\_Listing

aagaacaat ctgtttgga gacttcatct gagttcggt ttcacagaaa ttcattgaga 420  
aataagcctg aaaattccaa cggaaattac accatggaa ctactgtcca aggagatgtg 480  
ttatgtcatg acgaaaccaa acactcagag gcgtcaggc agaatttcag agaagaagaa 540  
gaagaagaag agaagggaga ggtgagcaaa aaacgagaaa gagaagcaaa taacgatgat 600  
agttcattga aggaggatca gggtgtgcg gtaaggatgg tgaaggcccg aacg 654

<210> 31  
<211> 218  
<212> PRT  
<213> *Arabidopsis thaliana*

<220>  
<221> peptide  
<222> (1)..(218)  
<223> ceres\_Seq\_ID\_no\_12321175

<400> 31  
Met Glu Asn Asp Cys Thr Val Asn Ile Val Ser Leu Glu Lys Asp Arg  
1 5 10 15

Asp Val Ser Glu Ala Ser Ala Glu Ser Gln Ser Glu Ser Thr Leu Ser  
20 25 30

Asn Ser Leu Asp Ser Gly Val Thr Ala Glu Thr Ser Arg Ser Asp Ala  
35 40 45

Asp Ser Lys Leu Asp Glu Cys Thr Ala Trp Thr Asn Glu Lys His Asn  
50 55 60

Ser Tyr Leu Asp Tyr Leu Glu Ser Ser Phe Val Arg Gln Leu Tyr Ser  
65 70 75 80

Leu Leu Gly Gly Gly Thr Gln Arg Leu Ser Arg Thr Arg Asp Val Gln  
85 90 95

Ser Asn Ser His Lys Ser Ala Asp Gln Phe Thr Val Leu Gln Asn Gly  
100 105 110

Cys Trp Gln Lys Val Asn Phe Gly Lys Lys Gln Ser Cys Leu Glu Thr  
115 120 125

Ser Ser Glu Phe Arg Phe His Arg Asn Ser Leu Arg Asn Lys Pro Glu  
130 135 140

Asn Ser Asn Gly Asn Tyr Thr Met Gly Thr Thr Val Gln Gly Asp Val  
145 150 155 160

Leu Cys His Asp Glu Thr Lys His Ser Glu Ala Ser Gly Gin Asn Phe  
165 170 175

Arg Glu Glu Glu Glu Glu Glu Glu Lys Gly Glu Val Ser Lys Lys Arg  
180 185 190

Glu Arg Glu Ala Asn Asn Asp Asp Ser Ser Leu Lys Glu Asp Gln Val  
195 200 205  
Page 17

2011-01-04 Substitute\_Sequence\_Listing

Val Pro Val Arg Met Val Lys Pro Arg Thr  
210 215

<210> 32  
<211> 1027  
<212> DNA  
<213> Arabidopsis thaliana

<220>  
<221> misc\_feature  
<222> (1)..(1027)  
<223> ceres Seq. ID no. 12323601

<400> 32  
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tttctccgac gactctgacg attcttccga cgtatgttct tccgtggagg gagagaccac 180  
ttcttccatg tactctgcgg ggaaagagta tatggaaaca gaatggacta atgagaagca 240  
tagtttata tctaataatcta tggaagcttc attctgtatc cagttatata actcgctcg 300  
agctctcggg aagaacgaga atgtatccga atcaacgagg ttccggtagcg gttagaaaacc 360  
gtctcaagaa cagttcaagg ttcttcatga tggtttctgg cagaagatttta atgtgaaaca 420  
acctgaacat cggtttaacg gaaggcacgg tggtaattctt catgatgttc ttaggagttcc 480  
atggattaaag cattataaaac ctttagtataa gacacaaaatc ccggtaacgg atgagcccg 540  
aaatcaagtt gttagcagct ctaatggaa gaaggaaata tgccagctcg gctcggccctc 600  
tagtctcaag cagctaaatc ctcatttcgcg tgaccacgac caaatcagcg ttggagaagc 660  
agaggatcatcg gatcggaaact ttgttaacga aggaataaaa ggcggaaaacg gaagctcgaa 720  
gaagatgtaa acgggtatcg tgagtgtatc gtcggatcgatc gatcggatcg ttccactcaa 780  
taagctcttg caacatgacg taaatttggaa gtcgtttctt tgagggatca gatgggtgaag 840  
ctttatataatgaa ggagagaatt ttgtatgtatataatggatcataacttat aagtcaaaatt 900  
tactatccctt agttacaatgt ttcttcatca tatatcccta actataaataat tattttatgt 960  
ctcatgtgag tggatttgc ttcttcatca tatatcccta actataaataat tattttatgtt 1020  
gatggtc 1027

<210> 33  
<211> 819  
<212> DNA  
<213> Arabidopsis thaliana

<400> 33  
gatatttttgt ttctctctttt ctctctgtata tttttcattt ttcttcttctt ctctctctct 60  
ctccacaaaatgataaagccaaac aatgggtggat gattacagag gacgcgttttag tagccgtcg 120  
Page 18

2011-01-04 Substitute\_Sequence\_Listing

ttctccgacg	actctgacga	ttctccgac	gatgcttctt	ccgtggaggg	agagaccact	180
tcttccatgt	actctgcggg	gaaagagtagt	atggaaacag	aatggactaa	tgagaagcat	240
agtttatatac	ttaaatctca	gaaagcttca	ttcgttagatc	agtttatataa	ctcgctcgaa	300
gctctcgaaa	agaacggaaa	tgtatccgaa	tcaacgggt	tcggtagcgg	tagaaaaccc	360
tctcaagaac	agttcaaggt	tcttcatgtat	ggtttctggc	agaagattaa	tgtgaaacaa	420
cctgaacatc	ggattaaacgg	aaggcacgg	ggtaattctc	atgagttct	taggagtcca	480
tggattaagc	attataaacc	tttagttaaag	acacaatcc	cgtaacgg	tgagcccggaa	540
aatcaagttg	tttagcagctc	taatggaaag	aaggaaat	gcagctctgg	ctcagccctct	600
agtctcaagc	agctaagctc	tcattcgcgt	gaccacgacc	aaatcagcgt	tggagaagca	660
gaggtatcg	atcagaactt	tgttaacgaa	ggaataaaag	cgaaaacgg	aagctcgaag	720
aagatgaaga	cggtatgtat	gagtgaatcg	tcgagttaccg	atcaggttgt	tccactcaat	780
aagcttgc	aacatgacgt	aaatttgaag	tctgtttct			819

<210> 34

<211> 273

<212> PRT

<213> *Arabidopsis thaliana*

<220>

<221> peptide

<222> (1)..(273)

<223> *ceres* Seq. ID no. 12323602

<400> 34						
Asp Ile Leu Phe Leu Ser Phe Ser Leu Ile Phe Phe Ile Phe Phe						
1	5	10	15			
Phe Ser Leu Ser Leu His Lys Asp Lys Pro Thr Met Val Gly Asp Tyr						
20	25	30				
Arg Gly Arg Phe Ser Ser Arg Arg Phe Ser Asp Asp Ser Asp Asp Ser						
35	40	45				
Ser Asp Asp Ala Ser Ser Val Glu Gly Glu Thr Thr Ser Ser Met Tyr						
50	55	60				
Ser Ala Gly Lys Glu Tyr Met Glu Thr Glu Trp Thr Asn Glu Lys His						
65	70	75	80			
Ser Leu Tyr Leu Lys Ser Met Glu Ala Ser Phe Val Asp Gln Leu Tyr						
85	90	95				
Asn Ser Leu Gly Ala Leu Gly Lys Asn Glu Asn Val Ser Glu Ser Thr						
100	105	110				
Arg Phe Gly Ser Gly Arg Lys Pro Ser Gln Glu Gln Phe Lys Val Leu						
115	120	125				
His Asp Gly Phe Trp Gln Lys Ile Asn Val Lys Gln Pro Glu His Arg						
130	135	140				

2011-01-04 Substitute\_Sequence\_Listing

Ile Asn Gly Arg His Gly Gly Asn Ser His Glu Phe Leu Arg Ser Pro  
 145 150 155 160  
 Trp Ile Lys His Tyr Lys Pro Leu Val Lys Thr Gln Ile Pro Val Thr  
 165 170 175  
 Asp Glu Pro Glu Asn Gln Val Val Ser Ser Ser Asn Gly Lys Lys Gly  
 180 185 190  
 Ile Cys Ser Ser Gly Ser Ala Ser Ser Leu Lys Gln Leu Ser Ser His  
 195 200 205  
 Ser Arg Asp His Asp Gln Ile Ser Val Gly Glu Ala Glu Val Ser Asp  
 210 215 220  
 Gln Asn Phe Val Asn Glu Gly Ile Lys Gly Glu Asn Gly Ser Ser Lys  
 225 230 235 240  
 Lys Met Lys Thr Val Met Met Ser Glu Ser Ser Ser Thr Asp Gln Val  
 245 250 255  
 Val Pro Leu Asn Lys Leu Leu Gln His Asp Val Asn Leu Lys Ser Val  
 260 265 270

Ser

<210> 35  
 <211> 738  
 <212> DNA  
 <213> *Arabidopsis thaliana*

<400> 35  
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 tcttccgacg atgcttcttc cgtggaggga gagaccactt cttccatgta ctctgcgggg 120  
 aaagagtata tgaaacaga atggactaat gagaagcata gtttatatct taaatctatg 180  
 gaagcttcat tcgttagatca gtatataac tcgcgtcgag ctctcggaa gaacgagaat 240  
 gtatccgaat caacgaggtt cggtagcgtt agaaaaaccgt ctcaagaaca gtcaggtt 300  
 cttcatgtatg gttctggca gaagattaat gtgaaacaac ctgaacatcg gattaacgg 360  
 aggcacgggt gtaattctca tgagtttctt aggagtccat ggattaagca ttataaacct 420  
 ttagtaaaga cacaatccc ggttaacggat gagccgaaa atcaagttgt tagcagctct 480  
 aatggaaaga agggaatatg cagctctggc tcagcctcta gtctcaagca gctaaagctt 540  
 cattcgcgtg accacgacca aatcagcgtt ggagaagcag aggtatcggg tcagaacttt 600  
 gtttaacgaaag gaataaaaagg cggaaacggaa agctcgaaga agatgaagac ggtgtatgtatg 660  
 agtgaatcgt cgagtaccga tcaggttgg tccactcaata agctttgca acatgacgta 720  
 aatttgaagt ctgtttct 738

<210> 36  
 <211> 246  
 <212> PRT  
 <213> *Arabidopsis thaliana*

2011-01-04 Substitute\_Sequence\_Listing

<220>  
<221> peptide  
<222> (1)..(246)  
<223> ceres Seq. ID no. 12323603

<400> 36  
Met Val Gly Asp Tyr Arg Gly Arg Phe Ser Ser Arg Arg Phe Ser Asp  
1 5 10 15  
Asp Ser Asp Asp Ser Ser Asp Asp Ala Ser Ser Val Glu Gly Glu Thr  
20 25 30  
Thr Ser Ser Met Tyr Ser Ala Gly Lys Glu Tyr Met Glu Thr Glu Trp  
35 40 45  
Thr Asn Glu Lys His Ser Leu Tyr Leu Lys Ser Met Glu Ala Ser Phe  
50 55 60  
Val Asp Gln Leu Tyr Asn Ser Leu Gly Ala Leu Gly Lys Asn Glu Asn  
65 70 75 80  
Val Ser Glu Ser Thr Arg Phe Gly Ser Gly Arg Lys Pro Ser Gln Glu  
85 90 95  
Gln Phe Lys Val Leu His Asp Gly Phe Trp Gln Lys Ile Asn Val Lys  
100 105 110  
Gln Pro Glu His Arg Ile Asn Gly Arg His Gly Gly Asn Ser His Glu  
115 120 125  
Phe Leu Arg Ser Pro Trp Ile Lys His Tyr Lys Pro Leu Val Lys Thr  
130 135 140  
Gln Ile Pro Val Thr Asp Glu Pro Glu Asn Gln Val Val Ser Ser Ser  
145 150 155 160  
Asn Gly Lys Lys Gly Ile Cys Ser Ser Gly Ser Ala Ser Ser Leu Lys  
165 170 175  
Gln Leu Ser Ser His Ser Arg Asp His Asp Gln Ile Ser Val Gly Glu  
180 185 190  
Ala Glu Val Ser Asp Gln Asn Phe Val Asn Glu Gly Ile Lys Gly Glu  
195 200 205  
Asn Gly Ser Ser Lys Lys Met Lys Thr Val Met Met Ser Glu Ser Ser  
210 215 220  
Ser Thr Asp Gln Val Val Pro Leu Asn Lys Leu Leu Gln His Asp Val  
225 230 235 240  
Asn Leu Lys Ser Val Ser  
245

<210> 37  
<211> 633  
<212> DNA  
<213> Arabidopsis thaliana

<400> 37

2011-01-04 Substitute\_Sequence\_Listing  
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tatcttaat ctaggaagc ttcatcgta gatcagtttataatcgcgt cggagctctc 120  
ggaaagaacg agaatgtatc cgaatcaacg aggttccgttgcggtagaaa accgtctcaa 180  
gaacagttca aggttcttca tgatggtttc tggcagaaga ttaatgtgaa acaacctgaa 240  
catcggttta acggaaaggca cgggtggtaat tctcatgagt ttcttaggag tccatggatt 300  
aagcattata aacctttatgaaagacacaa atccccgttacggatgagcc cgaaaatcaa 360  
gttggtagca gctcttaatgg gaagaaggga atatgcagct ctggctcagc ctctagtc 420  
aagcagctaa gctctcattc gcgtgaccac gaccaatca gcgttggaga aacgagggta 480  
tcggatcaga actttgtttaa cgaaggaaa aaaggcggaaa acggaaagctc gaagaagatg 540  
aagacgggtga tgatgagtga atcgtcgagt accgatcagg ttgtttccact caataagctc 600  
tttgcacatg acgttaatattt qaaqtcgttt tct 633

<210> 38  
<211> 211  
<212> PRT  
<213> *Arabidopsis thaliana*

<220>  
<221> peptide  
<222> (1)..(211)  
<223> ceres Seq. ID no. 12323604

<400> 38  
Met Tyr Ser Ala Gly Lys Glu Tyr Met Glu Thr Glu Trp Thr Asn Glu  
1 5 10 15

Lys His Ser Leu Tyr Leu Lys Ser Met Glu Ala Ser Phe Val Asp Gln  
20 25 30

Leu Tyr Asn Ser Leu Gly Ala Leu Gly Lys Asn Glu Asn Val Ser Glu  
35 40 45

Ser Thr Arg Phe Gly Ser Gly Arg Lys Pro Ser Gln Glu Gln Phe Lys  
50 55 60

Val Leu His Asp Gly Phe Trp Gln Lys Ile Asn Val Lys Gln Pro Glu  
65 70 75 80

His Arg Ile Asn Gly Arg His Gly Gly Asn Ser His Glu Phe Leu Arg  
85 90 95

Ser Pro Trp Ile Lys His Tyr Lys Pro Leu Val Lys Thr Gln Ile Pro  
100 105 110

Val Thr Asp Glu Pro Glu Asn Gln Val Val Ser Ser Ser Asn Gly Lys  
115 120 125

Lys Gly Ile Cys Ser Ser Gly Ser Ala Ser Ser Leu Lys Gln Leu Ser  
130 135 140

Ser His Ser Arg Asp His Asp Gln Ile Ser Val Gly Glu Ala Glu Val  
145 150 155 160

2011-01-04 Substitute\_Sequence\_Listing

Ser Asp Gln Asn Phe Val Asn Glu Gly Ile Lys Gly Glu Asn Gly Ser  
 165 170 175  
 Ser Lys Lys Met Lys Thr Val Met Met Ser Glu Ser Ser Ser Thr Asp  
 180 185 190  
 Gln Val Val Pro Leu Asn Lys Leu Leu Gln His Asp Val Asn Leu Lys  
 195 200 205  
 Ser Val Ser  
 210

<210> 39  
<211> 960  
<212> DNA  
<213> *Arabidopsis thaliana*

<220>  
<221> misc\_feature  
<222> (1)..(960)  
<223> ceres Seq. ID no. 13491409

<400> 39  
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ccacaaagat aagccaacaa tgggttggta ttacagagga cgctttagta gccgtcggtt 120  
ctccgatgac tctgacgatt cttccgacga tgcttcttcc gtggaggagg agaccacttc 180  
ttccatgtac tctgcgggaa aagagtatata gaaaaacagaa tggactaatg agaagcatag 240  
tttatatctt aaatctatgg aagcttcatt ctagatcatg ttatataact cgctcgagc 300  
tctcgggaag aacgagaatg tatccgaatc aacgagggtt ggtacggta gaaaaccgtc 360  
tcaagaacag ttcagggtt ttcatgatgg tttctggcag aagattaatg tgaacaacacc 420  
tgaacatcgg attaacggaa ggcacggtgg taattctcat gagtttctta ggagtccatg 480  
gattaagcat tataaacctt tagtaaagac acaaatccgg gtaacggatg agcccgaaaa 540  
tcaagttgtt agcagctcta atggaaagaa gggaatatgc agctctggct cagcctctag 600  
tctcaaggcag ctaagctctc attcgcgtga ccacgaccaa atcagcgttg gagaaggcaga 660  
ggtatcgat cagaactttg ttaacgaaagg aataaaaggc gaaaacggaa gctcgaagaa 720  
gatgaagacg gtatgtatga gtatgcgtc gtagtaccgt cagggttgc cactcaataa 780  
actcttgcaa catgacgtaa atttgaagtc tggttcttga gaggtcagat ggtgaagctt 840  
tatatgagga gagaattttg taatgtatata tttatgtat aacttataag tcaaattttac 900  
tatctttaatg tacaaggttt ttcatcatat atcccttaact ataaatataat ttatatacc 960

<210> 40  
<211> 816  
<212> DNA  
<213> *Arabidopsis thaliana*

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<400> 40  
ttttgtttc tctttctc tctgatattt ttcattttctc tctttctc tctctctc 60  
cacaagata agccaacaat gggtggat tacagaggac gcttttagtag ccgtcgttc 120  
tccgatgact ctgacgattc ttccgacgat gcttcttccg tgaggggaga gaccattct 180  
tccatgtact ctgcgggaa agagtatatg gaaacagaat ggactaatga gaagcatagt 240  
ttatatctta aatctatggc agcttcattc gttagatcagt tatataactc gctcgagct 300  
ctcggaga acgagaatgt atccgaatca acgaggatcg gtacggtag aaaaccgtct 360  
caagaacagt tcaagggttct tcatgatggt ttctggcaga agatataatgt gaaacaacct 420  
gaacatcggc ttaacggaaag gcacgggtgtt aatttcatg agtttcttag gactccatgg 480  
attdaaggatt ataaacctt agtaaagaca caaatcccg taacggatga gcccggaaat 540  
caagttgttgc acgactctaa tggaagaag ggaatatgc gctctggctc agcctctagt 600  
ctcaagcagc taagctctca ttgcgtgac cacgacccaa tcacggttgg agaaggag 660  
gtatcggatc agaactttgt taacgaagga ataaaaggcg aaaacggaaag ctcgaagaag 720  
atgaagacgg ttagtgcgtg tgaatcgtcg agtaccgatc aggttggcc actcaataaa 780  
ctcttgcac atgacgtaaa ttgttgcgttct gtttct 816

<210> 41  
<211> 272  
<212> PRT  
<213> *Arabidopsis thaliana*

<220>  
<221> peptide  
<222> (1)..(272)  
<223> *ceres* Seq. ID no. 13491410

<400> 41  
Phe Leu Phe Leu Ser Phe Ser Leu Ile Phe Phe Ile Phe Phe Phe Phe  
1 5 10 15  
Ser Leu Ser Leu His Lys Asp Lys Pro Thr Met Val Gly Asp Tyr Arg  
20 25 30  
Gly Arg Phe Ser Ser Arg Arg Phe Ser Asp Asp Ser Asp Asp Ser Ser  
35 40 45  
Asp Asp Ala Ser Ser Val Glu Gly Glu Thr Thr Ser Ser Met Tyr Ser  
50 55 60  
Ala Gly Lys Glu Tyr Met Glu Thr Glu Trp Thr Asn Glu Lys His Ser  
65 70 75 80  
Leu Tyr Leu Lys Ser Met Glu Ala Ser Phe Val Asp Gln Leu Tyr Asn  
85 90 95  
Ser Leu Gly Ala Leu Gly Lys Asn Glu Asn Val Ser Glu Ser Thr Arg

100

2011-01-04 Substitute\_Sequence\_Listing  
105  
110

Phe Gly Ser Gly Arg Lys Pro Ser Gln Glu Gln Phe Lys Val Leu His  
115 120 125

Asp Gly Phe Trp Gln Lys Ile Asn Val Lys Gln Pro Glu His Arg Ile  
130 135 140

Asn Gly Arg His Gly Gly Asn Ser His Glu Phe Leu Arg Ser Pro Trp  
145 150 155 160

Ile Lys His Tyr Lys Pro Leu Val Lys Thr Gln Ile Pro Val Thr Asp  
165 170 175

Glu Pro Glu Asn Gln Val Val Ser Ser Asn Gly Lys Lys Gly Ile  
180 185 190

Cys Ser Ser Gly Ser Ala Ser Ser Leu Lys Gln Leu Ser Ser His Ser  
195 200 205

Arg Asp His Asp Gln Ile Ser Val Gly Glu Ala Glu Val Ser Asp Gln  
210 215 220

Asn Phe Val Asn Glu Gly Ile Lys Gly Glu Asn Gly Ser Ser Lys Lys  
225 230 235 240

Met Lys Thr Val Met Met Ser Glu Ser Ser Ser Thr Asp Gln Val Val  
245 250 255

Pro Leu Asn Lys Leu Leu Gln His Asp Val Asn Leu Lys Ser Val Ser  
260 265 270

<210> 42  
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<212> DNA  
<213> *Arabidopsis thaliana*

<400> 42  
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aaagagtata tgaaacaga atggactaat gagaagcata gtttatatct taaatctatg 180  
gaagcttcat tcgttagatca gttatataac tcgctcgagg ctctcgggaa gaacgagaat 240  
gtatccgaat caacgaggtt cggtagcgggt agaaaaccgt ctcagaaca gtcaggat 300  
cttcatgtatc gttctggca gaaggatataa gtgaaacaac ctgaacatcg gattaacgg 360  
aggcacgggt gtaattctca tgagttctt aggagtccat ggattaagca ttataaacct 420  
tttagtaaaga cacaatccc ggtaacggat gagccggaaa atcaagttgt tagcagctct 480  
aatggaaaga aggaaatatg cagctctggc tcagcctcta gtctcaagca gctaaagctct 540  
cattcgcgtg accacgacca aatcagcgtt ggagaagcag aggtatcggta tcagaacttt 600  
gttaacgaaag gaataaaaagg cgaaaacggaa agctcgaaga agatgaagac ggtgtatgt 660  
agtgaatcgt cgagtaccga tcaggttggtt ccactcaata aactcttgc acatgacgatc 720

aatttgaagt ctgtttct

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738

<210> 43  
<211> 246  
<212> PRT  
<213> Arabidopsis thaliana

<220>  
<221> peptide  
<222> (1)..(246)  
<223> ceres Seq. ID no. 13491411

<400> 43  
Met Val Gly Asp Tyr Arg Gly Arg Phe Ser Ser Arg Arg Phe Ser Asp  
1 5 10 15  
Asp Ser Asp Asp Ser Ser Asp Ala Ser Ser Val Glu Gly Glu Thr  
20 25 30  
Thr Ser Ser Met Tyr Ser Ala Gly Lys Glu Tyr Met Glu Thr Glu Trp  
35 40 45  
Thr Asn Glu Lys His Ser Leu Tyr Leu Lys Ser Met Glu Ala Ser Phe  
50 55 60  
Val Asp Gln Leu Tyr Asn Ser Leu Gly Ala Leu Gly Lys Asn Glu Asn  
65 70 75 80  
Val Ser Glu Ser Thr Arg Phe Gly Ser Gly Arg Lys Pro Ser Gln Glu  
85 90 95  
Gln Phe Lys Val Leu His Asp Gly Phe Trp Gln Lys Ile Asn Val Lys  
100 105 110  
Gln Pro Glu His Arg Ile Asn Gly Arg His Gly Gly Asn Ser His Glu  
115 120 125  
Phe Leu Arg Ser Pro Trp Ile Lys His Tyr Lys Pro Leu Val Lys Thr  
130 135 140  
Gln Ile Pro Val Thr Asp Glu Pro Glu Asn Gln Val Val Ser Ser Ser  
145 150 155 160  
Asn Gly Lys Lys Gly Ile Cys Ser Ser Gly Ser Ala Ser Ser Leu Lys  
165 170 175  
Gln Leu Ser Ser His Ser Arg Asp His Asp Gln Ile Ser Val Gly Glu  
180 185 190  
Ala Glu Val Ser Asp Gln Asn Phe Val Asn Glu Gly Ile Lys Gly Glu  
195 200 205  
Asn Gly Ser Ser Lys Lys Met Lys Thr Val Met Met Ser Glu Ser Ser  
210 215 220  
Ser Thr Asp Gln Val Val Pro Leu Asn Lys Leu Leu Gln His Asp Val  
225 230 235 240  
Asn Leu Lys Ser Val Ser  
245

## 2011-01-04 Substitute\_Sequence\_Listing

<210> 44  
 <211> 633  
 <212> DNA  
 <213> *Arabidopsis thaliana*

<400> 44  
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 gggagaacg agaatgtatc cgaatcaacg aggttcggta gcggtagaaa accgtctcaa 180  
 gaacagttca aggttctca tggatggttc tggcagaaga ttaatgtgaa acaacctgaa 240  
 catcgattt acggaaggca cgggttataat ctcatgagt ttcttaggag tccatggatt 300  
 aaggattata aacctttatg aaagacacaa atccccgtaa cggatgagcc cggaaatcaa 360  
 gttgttagca gctctaatgg gaagaaggaa atatgcgact ctggctcagc ctctagtc 420  
 aaggcgttca gctctcatc gcgtgaccac gaccaaatca gcgttggaga agcagaggtt 480  
 tcggatcaga acctttttaa cgaaggata aaaggcgaaa acggagctc gaagaagatg 540  
 aagacgggtga tggatggatc atcgtcgagt accgtcagg ttgttccact caataaactc 600  
 ttgcaacatg acgttaattt gaagtctgtt tct 633

<210> 45  
 <211> 211  
 <212> PRT  
 <213> *Arabidopsis thaliana*

<220>  
 <221> peptide  
 <222> (1)..(211)  
 <223> *ceres* Seq. ID no. 13491412

<400> 45  
 Met Tyr Ser Ala Gly Lys Glu Tyr Met Glu Thr Glu Trp Thr Asn Glu  
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 Lys His Ser Leu Tyr Leu Lys Ser Met Glu Ala Ser Phe Val Asp Gln  
 20 25 30  
 Leu Tyr Asn Ser Leu Gly Ala Leu Gly Lys Asn Glu Asn Val Ser Glu  
 35 40 45  
 Ser Thr Arg Phe Gly Ser Gly Arg Lys Pro Ser Gln Glu Gln Phe Lys  
 50 55 60  
 Val Leu His Asp Gly Phe Trp Gln Lys Ile Asn Val Lys Gln Pro Glu  
 65 70 75 80  
 His Arg Ile Asn Gly Arg His Gly Gly Asn Ser His Glu Phe Leu Arg  
 85 90 95  
 Ser Pro Trp Ile Lys His Tyr Lys Pro Leu Val Lys Thr Gln Ile Pro  
 100 105 110  
 Val Thr Asp Glu Pro Glu Asn Gln Val Val Ser Ser Asn Gly Lys  
 115 120 125

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Lys Gly Ile Cys Ser Ser Gly Ser Ala Ser Ser Leu Lys Gln Leu Ser  
130 135 140  
Ser His Ser Arg Asp His Asp Gln Ile Ser Val Gly Glu Ala Glu Val  
145 150 155 160  
Ser Asp Gln Asn Phe Val Asn Glu Gly Ile Lys Gly Glu Asn Gln Ser  
165 170 175  
Ser Lys Lys Met Lys Thr Val Met Met Ser Glu Ser Ser Ser Thr Asp  
180 185 190  
Gln Val Val Pro Leu Asn Lys Leu Leu Gln His Asp Val Asn Leu Lys  
195 200 205  
Ser Val Ser  
210

<210> 46  
<211> 1031  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> clone nucleotide 486033

<220>  
<221> misc\_feature  
<222> (609)..(609)  
<223> n is a, c, g, or t

<400> 46  
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ttttgcgtt cagtttgcat cctgagctct ctccctggacc agccgagatt tctctctctg 120  
cgccatctcta attcatcttc gtcgagagga gctgttcctc ttctttgccc cctcgaatct 180  
gggactggtc ggttttctgg atccctgctg cctgtcggtt tctcgagagg tgtaaaatcc 240  
aatggagggt gtgtcatcgat tgaaccagcc gttgtatcaac gacgcacggc agcccggtgcc 300  
cagcagttatc gccaagggtg atcaaattca aggcctgttg tcgggtgaat ggacaaatgaa 360  
gcggccacagc tcgtacataa gctccatggaa ggcattttc gtggagcaac tccgtatgtgg 420  
ttccaaggcc atccaggagg gcttgcgcgca gaggcatgagg attccgaggat atgtatgcctc 480  
cagccatgac gttccatgaga gttccgtgggt ggtgtggagg cgtttcaggc cacgcgggtgt 540  
ccaccatggc gatggaatgg aagtggaaacc ttgggtcgat gggtatggat caggtaactgaa 600  
cacggcccnng agagaaggtc cggacccacg caagatagcg aaggcttctg ctattattgaa 660  
agtacacggac cagaattttc ctggaggagg gattcaatcc agtaacgggt catgcaagag 720  
acagaaatctt acctcctggca atgcatcaaa tggccagggt acttaacaag atagtggaaag 780

2011-01-04 Substitute\_Sequence\_Listing  
ccaagccatg cccctctgta agccttcagg aggcctatggg gaaacgaga ctgtctgca 840  
gtactacgtg atgacaggta gtgtgcgcg tgcgtatgtt tggcttacc aaaatatgtat 900  
atcgctgtcc ttctgcggt gtggagagta gaatatgcat atccacatct gcagagagca 960  
ccggctctct tcttttgtt gcttacta ttttgccca tggagcaat ttatggta 1020  
aatttgagct g 1031

<210> 47  
<211> 174  
<212> PRT  
<213> Artificial sequence  
<220>  
<223> clone peptide 486033

<220>  
<221> misc\_feature  
<222> (123)..(123)  
<223> Xaa can be any naturally occurring amino acid  
<400> 47

Met Glu Gly Val Ser Ser Leu Asn Gln Pro Leu Ile Asn Asp Asp Arg  
1 5 10 15

Gln Pro Val Pro Ser Ser Ile Ala Lys Gly Asp Gln Ile Gln Gly Leu  
20 25 30

Leu Ser Gly Glu Trp Thr Asn Glu Arg His Ser Ser Tyr Ile Ser Ser  
35 40 45

Met Glu Ala Ser Phe Val Glu Gln Leu Arg Ser Gly Ser Lys Ala Ile  
50 55 60

Gln Glu Gly Leu Cys Gln Ser Met Arg Ile Pro Arg Asp Asp Ala Arg  
65 70 75 80

Ser His Asp Val Pro Glu Ser Pro Trp Val Val Val Arg Arg Phe Arg  
85 90 95

Pro Arg Gly Val His His Gly Asp Gly Met Glu Val Glu Pro Leu Val  
100 105 110

Asp Gly Tyr Gly Ser Gly Thr Asp Thr Ala Xaa Arg Glu Gly Pro Asp  
115 120 125

Pro Arg Lys Ile Ala Lys Ala Ser Ala Ile Ile Glu Val Thr Asp Gln  
130 135 140

2011-01-04 Substitute\_Sequence\_Listing  
Asn Phe Pro Glu Glu Ile Gln Ser Ser Asn Gly Ala Cys Lys Arg  
145 150 155 160

Gln Lys Ser Thr Pro Gly Asn Ala Ser Asn Gly Gln Gly Thr  
165 170

<210> 48  
<211> 210  
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<220>  
<223> Consensus sequence derived from various organisms

<220>  
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<222> (2)..(2)  
<223> Xaa is Glu or Lys

<220>  
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<222> (3)..(3)  
<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>  
<221> misc\_feature  
<222> (5)..(5)  
<223> Xaa is Thr or Pro

<220>  
<221> misc\_feature  
<222> (7)..(8)  
<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>  
<221> misc\_feature  
<222> (9)..(9)  
<223> Xaa is Met or Gly

<220>  
<221> misc\_feature  
<222> (10)..(10)  
<223> Xaa is Tyr or Ile

<220>  
<221> misc\_feature  
<222> (11)..(11)  
<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>  
<221> misc\_feature  
<222> (12)..(12)  
<223> Xaa is Ala or Lys

<220>  
<221> misc\_feature  
<222> (14)..(14)

2011-01-04 Substitute\_Sequence\_Listing

<223> Xaa is Lys or Asn

<220>

<221> misc\_feature

<222> (15)..(15)

<223> Xaa is Glu or Arg

<220>

<221> misc\_feature

<222> (16)..(16)

<223> Xaa is Tyr or Val

<220>

<221> misc\_feature

<222> (17)..(17)

<223> Xaa is an aliphatic residue, specifically, isoleucine, valine, leucine, or methionine

<220>

<221> misc\_feature

<222> (18)..(18)

<223> Xaa is any amino acid

<220>

<221> misc\_feature

<222> (19)..(19)

<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>

<221> misc\_feature

<222> (20)..(23)

<223> At least 1 but as many as 4 of the Xaa amino acids can be present;

<223> Xaa is any amino acid

<220>

<221> misc\_feature

<222> (26)..(26)

<223> Xaa is Asn or Asp

<220>

<221> misc\_feature

<222> (28)..(28)

<223> Xaa is a positively charged residue, specifically, lysine, arginine, or histidine

<220>

<221> misc\_feature

<222> (30)..(30)

<223> Xaa is any amino acid

<220>

<221> misc\_feature

<222> (31)..(31)

<223> Xaa is Leu or Ser

<220>

<221> misc\_feature

<222> (33)..(33)

<223> Xaa is an aliphatic residue, specifically, isoleucine, valine, leucine, or methionine

<220>

2011-01-04 Substitute\_Sequence\_Listing

<221> misc\_feature  
<222> (34)..(34)  
<223> Xaa is Lys or Ser

<220>  
<221> misc\_feature  
<222> (42)..(42)  
<223> Xaa is any negatively charged amino acid, specifically, aspartic acid or glutamic acid

<220>  
<221> misc\_feature  
<222> (45)..(74)  
<223> Any one or all of the Xaa amino acids can either be present or absent; Xaa is any amino acid

<220>  
<221> misc\_feature  
<222> (76)..(76)  
<223> Xaa is Val or Ala

<220>  
<221> misc\_feature  
<222> (77)..(77)  
<223> Xaa is an aliphatic residue, specifically, isoleucine, valine, leucine, or methionine

<220>  
<221> misc\_feature  
<222> (78)..(79)  
<223> Xaa is any amino acid

<220>  
<221> misc\_feature  
<222> (80)..(80)  
<223> Xaa is Gly or Glu

<220>  
<221> misc\_feature  
<222> (81)..(82)  
<223> Xaa is any amino acid

<220>  
<221> misc\_feature  
<222> (83)..(83)  
<223> Xaa is Gln or Glu

<220>  
<221> misc\_feature  
<222> (84)..(102)  
<223> At least 9 but as many as 19 of the Xaa amino acids can be present; Xaa is any amino acid

<220>  
<221> misc\_feature  
<222> (103)..(103)  
<223> Xaa is His or Cys

<220>  
<221> misc\_feature  
<222> (104)..(104)  
<223> Xaa is any amino acid

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<221> misc_feature
<222> (105)..(105)
<223> Xaa is Phe or Val

<220>
<221> misc_feature
<222> (106)..(106)
<223> Xaa is Leu or Pro

<220>
<221> misc_feature
<222> (107)..(107)
<223> Xaa is any amino acid

<220>
<221> misc_feature
<222> (108)..(108)
<223> Xaa is Ser or Asn

<220>
<221> misc_feature
<222> (111)..(112)
<223> Any one or all of the Xaa amino acids can either be present or
absent; Xaa is any amino acid

<220>
<221> misc_feature
<222> (113)..(113)
<223> Xaa is an aliphatic residue, specifically, isoleucine, valine,
leucine, or methionine

<220>
<221> misc_feature
<222> (114)..(114)
<223> Xaa is any amino acid

<220>
<221> misc_feature
<222> (115)..(115)
<223> Xaa is a positively charged residue, specifically, lysine,
arginine, or histidine

<220>
<221> misc_feature
<222> (116)..(116)
<223> Xaa is any aromatic residue, specifically, phenylalanine,
tyrosine, or tryptophan

<220>
<221> misc_feature
<222> (117)..(117)
<223> Xaa is a positively charged residue, specifically, lysine,
arginine, or histidine

<220>
<221> misc_feature
<222> (119)..(126)
<223> Any one or all of the Xaa amino acids can either be present
or absent; Xaa is any amino acid

<220>
<221> misc_feature
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2011-01-04 Substitute\_Sequence\_Listing

<222> (127)..(127)  
<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>  
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<222> (129)..(130)  
<223> Xaa is any amino acid

<220>  
<221> misc\_feature  
<222> (131)..(131)  
<223> Xaa is Glu or Asn

<220>  
<221> misc\_feature  
<222> (132)..(139)  
<223> Xaa is any amino acid

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<223> Xaa is Gly

<220>  
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<222> (141)..(146)  
<223> Any one or all of the Xaa amino acids can either be present or absent; Xaa is any amino acid

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<222> (148)..(148)  
<223> Xaa is Gly or Pro

<220>  
<221> misc\_feature  
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<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>  
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<222> (150)..(150)  
<223> Xaa is any amino acid

<220>  
<221> misc\_feature  
<222> (151)..(151)  
<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>  
<221> misc\_feature  
<222> (152)..(153)  
<223> Xaa is any amino acid

<220>  
<221> misc\_feature  
<222> (154)..(154)  
<223> Xaa is a positively charged residue, specifically, lysine, arginine, or histidine

2011-01-04 Substitute\_Sequence\_Listing

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<222> (155)..(171)  
<223> At least 6 but as many as 17 of the Xaa amino acids can be present; Xaa is any amino acid

<220>  
<221> misc\_feature  
<222> (172)..(172)  
<223> Xaa is Gln or Lys

<220>  
<221> misc\_feature  
<222> (173)..(173)  
<223> Xaa is an aliphatic residue, specifically, isoleucine, valine, leucine, or methionine

<220>  
<221> misc\_feature  
<222> (174)..(176)  
<223> Xaa is any amino acid

<220>  
<221> misc\_feature  
<222> (177)..(177)  
<223> Xaa is Glu or Ser

<220>  
<221> misc\_feature  
<222> (178)..(180)  
<223> At least 1 but as many as 3 of the Xaa amino acids can be present; Xaa is any amino acid

<220>  
<221> misc\_feature  
<222> (183)..(183)  
<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>  
<221> misc\_feature  
<222> (188)..(189)  
<223> Xaa is any amino acid

<220>  
<221> misc\_feature  
<222> (190)..(190)  
<223> Xaa is any negatively charged amino acid, specifically, aspartic acid or glutamic acid

<220>  
<221> misc\_feature  
<222> (191)..(191)  
<223> Xaa is Gly or Glu

<220>  
<221> misc\_feature  
<222> (192)..(192)  
<223> Xaa is Ile or Ala

<220>  
<221> misc\_feature  
<222> (193)..(193)

2011-01-04 Substitute\_Sequence\_Listing

<223> Xaa is any amino acid

<220>

<221> misc\_feature

<222> (194)..(194)

<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>

<221> misc\_feature

<222> (195)..(195)

<223> Xaa is Glu or Ser

<220>

<221> misc\_feature

<222> (196)..(196)

<223> Xaa is Asn or Thr

<220>

<221> misc\_feature

<222> (197)..(197)

<223> Xaa is Gly or Glu

<220>

<221> misc\_feature

<222> (198)..(198)

<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>

<221> misc\_feature

<222> (199)..(199)

<223> Xaa is any amino acid

<220>

<221> misc\_feature

<222> (201)..(202)

<223> Xaa is any amino acid

<220>

<221> misc\_feature

<222> (204)..(204)

<223> Xaa is any amino acid

<220>

<221> misc\_feature

<222> (205)..(205)

<223> Xaa is Val or Arg

<220>

<221> misc\_feature

<222> (206)..(206)

<223> Xaa is Met or Arg

<220>

<221> misc\_feature

<222> (207)..(207)

<223> Xaa is an aliphatic residue, specifically, isoleucine, valine, leucine, or methionine

<220>

<221> misc\_feature

<222> (209)..(209)

2011-01-04 Substitute\_Sequence\_Listing

<223> Xaa is Glu or Arg

<220>

<221> misc\_feature

<222> (210)..(210)

<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<400> 48

Val Xaa Xaa Glu Xaa Thr Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Trp Thr Xaa Glu Xaa His Xaa Xaa Tyr  
20 25 30

Xaa Xaa Ser Met Glu Ala Ser Phe Val Xaa Gln Leu Xaa Xaa Xaa Xaa  
35 40 45

Xaa  
50 55 60

Xaa Lys Xaa Xaa Xaa Xaa  
65 70 75 80

Xaa  
85 90 95

Xaa Pro Trp Xaa Xaa  
100 105 110

Xaa Xaa Xaa Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp  
115 120 125

Xaa  
130 135 140

Xaa Xaa Ser Xaa  
145 150 155 160

Xaa  
165 170 175

Xaa Xaa Xaa Xaa Glu Val Xaa Asp Gln Asn Phe Xaa Xaa Xaa Xaa Xaa  
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Xaa Xaa

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<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>  
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<223> Xaa is Glu or Gly

<220>  
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<222> (12)..(16)  
<223> At least 2 but as many as 5 of the Xaa amino acids can be present;  
Xaa is any amino acid

<220>  
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<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

<220>  
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<223> At least 11 but as many as 14 of the Xaa amino acids can be present;  
Xaa is any amino acid

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<223> Xaa is Asn or Asp

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<223> Xaa is a positively charged residue, specifically, lysine, arginine,  
or histidine

<220>  
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<222> (38)..(39)  
<223> Xaa is any amino acid

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<220>  
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<222> (41)..(41)  
<223> Xaa is an aliphatic residue, specifically, isoleucine, valine, leucine, or methionine

<220>  
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<223> Xaa is any amino acid

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<223> Xaa is Ser or Tyr

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<223> Xaa is an aliphatic residue, specifically, isoleucine, valine, leucine, or methionine

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<222> (46)..(46)  
<223> Xaa is a tiny amino acid, specifically, alanine, glycine, serine or threonine

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<223> Xaa is any amino acid

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<222> (52)..(52)  
<223> Xaa is Lys or Ser

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<222> (53)..(135)  
<223> At least 8 but as many as 83 of the Xaa amino acids can be present;  
Xaa is any amino acid

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<223> Xaa is Pro or Glu

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<222> (137)..(137)  
<223> Xaa is any aromatic residue, specifically, phenylalanine, tyrosine, and tryptophan

<220>  
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<222> (138)..(141)  
<223> At least 2 but as many as 4 of the Xaa amino acids can be present;  
Xaa is any amino acid

<220>  
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<222> (142)..(142)  
<223> Xaa is a positively charged residue, specifically, lysine, arginine, or histidine

<220>  
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<222> (143)..(231)  
<223> At least 9 but as many as 89 of the Xaa amino acids can be present;  
Xaa is any amino acid

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<223> Xaa is Asp or Gly

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<223> Xaa is any negatively charged amino acid, specifically, aspartic acid or glutamic acid

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Xaa  
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Xaa Trp  
20 25 30

Thr Xaa Glu Xaa His Xaa Xaa Tyr Xaa Xaa Xaa Xaa Glu Xaa Ser Phe  
35 40 45

Val Xaa Gln Xaa  
50 55 60

Xaa  
65 70 75 80

Xaa  
85 90 95

Xaa  
100 105 110

Xaa  
115 120 125

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Xaa  
130 135 140

Xaa  
145 150 155 160

Xaa  
165 170 175

Xaa  
180 185 190

Xaa  
195 200 205

Xaa  
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Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Xaa Xaa Xaa Xaa Gln Asn Phe Xaa Xaa  
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Xaa

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hybridization from first-strand cDNA

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19